Claims

1. A communication system for use with a packet-based network comprising:

a first node configured to transmit data in data packets across the network;

a second node configured to receive the data packets from the network and serialize the data;

wherein the second node comprises a buffer, said buffer is configurable to adjust to network packet delay variance through analysis of packet delay variance as measured over at least one period of time.

2. The communication system of claim 1, wherein the packet delay variance measurement includes monitoring, for the at least one period of time, a buffer depth of the buffer, the buffer depth being a temporal measurement of a delay a data packet encounters from when the data packet is received by the buffer to when the data packet is serialized.

3. The communication system of claim 1, said buffer having configurable parameter settings for adjusting the buffer in accordance with the packet delay variance analysis.

4. The communication system of claim 3, the configurable parameter settings comprising:

a *buff set* parameter for determining a period of time for data to be accumulated into the buffer before being serialized.

5. The communication system of claim 3, the configurable parameter settings comprising:

a *buff max* parameter for setting an upper bound on an average buffer depth, the average buffer depth determined by averaging instantaneous measurements of the buffer depth over a determined period of time; and

a *buff min* parameter for setting a lower bound on the average buffer depth.

6. The communication system of claim 5, wherein if the average buffer depth is within a first proximity threshold of the *buff max* parameter setting, the second node increases the *buff max* parameter setting; and,

wherein if the average buffer depth is outside a second proximity threshold of the *buff max* parameter setting, the second node decreases the *buff max* parameter setting.

7. The communication system of claim 5, wherein the second node uses a clock signal for serializing the data packets received by the buffer; and,

wherein if the average buffer depth is within a first proximity threshold of the *buff min* parameter setting, the clock signal frequency is decreased; and,

wherein if the average buffer depth is outside a second proximity threshold of the *buff min* parameter setting, the clock signal frequency is increased.

8. The communication system of claim 1, said first node comprising a transmitting clock, said second node comprising a receiving clock, wherein said transmitting clock and said receiving clock are synchronized under nominal operating conditions.

9. The communication system of claim 1, wherein said second node additionally comprises a serializer.

10. A method of managing a buffer in a node of a packet-based network, wherein said buffer has configurable *buff set*, *buff max* and *buff min* parameters, and said node uses a clock, said method comprising:

(a) setting initial values for the *buff set*, *buff max* and *buff min* parameters;

(b) measuring buffer depth over a period of time;

(c) re-centering the buffer if an underflow event or an overflow event is detected; and

(d) adjusting *buff set*, *buff max* and *buff min* parameters and the clock according to measured buffer depth.

11. The method of claim 10, wherein step (b) comprises monitoring the buffer for the period of time to acquire instantaneous buffer depth measurements.

12. The method of claim 10, wherein an underflow event is detected in step (c) by comparing buffer depth with the *buff min* parameter.

13. The method of claim 12, wherein an underflow event is detected if the buffer depth exceeds the *buff min* parameter.

14. The method of claim 10, wherein an overflow event is detected in step (c) by comparing buffer depth with the *buff max* parameter.

15. The method of claim 14, wherein an overflow event is detected if the buffer depth exceeds the *buff max* parameter.

16. The method of claim 10, wherein re-centering in step (c) comprises discarding any data packets in the buffer.

17. The method of claim 10, further comprising, if an underflow event or an overflow event is detected in step (c), the step of increasing an overflow event count or an underflow event count, and comparing the overflow event count or the underflow event count to a threshold to determine if a gross adjustment is to be made to *buff set*.

18. The method of claim 10, wherein step (d) comprises:

increasing *buff max* if the measured buffer depth is within a predetermined inner proximity to buff max;

decreasing *buff max* if the measured buffer depth is outside a predetermined outer proximity to *buff max*;

decreasing the clock speed if the measured buffer depth is within a predetermined inner proximity to buff min; and

increasing the clock speed if the measured buffer depth is outside a predetermined outer proximity to *buff min*.

19. The method of claim 10, wherein step (a) comprises:

(i) setting buffer parameters *buff min, buff max* and *buff set* to pre-processing values;

(ii) receiving data packets by the node for a predetermined amount of time;

(iii) determining if data loss during the predetermined amount of time with parameters set at pre-processing values is within an acceptable limit;

(iv) if the data loss is not within the acceptable limit, then adjusting *buff min, buff max* and *buff set* parameters accordingly, and repeating steps ii and iii until data loss is within the acceptable limit; and

(v) setting values for the *buff set, buff max* and *buff min* parameters to the adjusted pre-processing values.

20. A method of managing a buffer in a node of a packet-based network, wherein said buffer is configurable and said node is adapted to receive synchronous circuit data in data packets, said method comprising:

(a) setting initial values for buffer configuration;

(b) receiving data by the node for a predetermined period of time and detecting data loss during the predetermined period of time;

(c) if detected data loss is not acceptable, adjusting buffer configuration and repeating step (b) until measured data loss is acceptable;

(d) receiving further data by the node; and

(e) periodically measuring buffer depth and adjusting buffer configuration based upon results of said periodic buffer depth measurements.

21. The method of claim 20, wherein buffer configuration is adjusted through configurable parameters *buff set*, *buff min*, and *buff max*.

22. The method of claim 20, wherein said node uses a clock, and said buffer configuration is adjusted by adjusting a speed of the clock.